

BOOK REVIEW

THE BIOLOGY OF THE TRACE ELEMENTS: Their role in nutrition. By Karl H. Schütte. XX plus 228 pages with 74 figures and 54 tables. London: Crosby Lockwood and Son Ltd., 1964, 40/-.

This book is the first of a series of international monographs on various aspects of animal and human nutrition which is being brought out under the distinguished editorship of Dr. Andre Voisin. These monographs are all being prepared by acknowledged specialists in their respective fields, so that the choice of his book to head this important series clearly indicates the high reputation which Dr. Schütte, of the Botany Department, University of Cape Town, has established for himself overseas in this, his chosen field.

For a plant or animal to be healthy *balanced* nutrition is of the utmost importance. This means that, if it is to grow and develop normally, any organism must be able to obtain adequate supplies of all the elements essential to its life from its immediate environment. Furthermore, such essential elements must be available in suitably balanced proportions, since an excess or deficiency of one or more essential elements may well have markedly adverse effects on its development. Unfortunately, most nutritional studies in the past have been mainly concerned with the correct balancing of the major elements in the fertiliser or the diet, with the consequence that it is only within the last few years that it has begun to be generally appreciated that trace element *imbalances* can be equally disastrous.

In the long run all animals are dependent on plants for their nutrition, whilst, apart from the limited amount of mineral elements supplied by man as agricultural fertilisers, plants themselves obtain their supplies of essential mineral elements from the soil. This ultimate dependence of all terrestrial life on the soil as the source of its trace element requirements at once raises the question as to how far the different soil regions of the earth are capable of providing all that is needed to support healthy crops. This question can only be answered by means of a global survey of trace element availability; a project which, unfortunately, is still in its infancy. However, such information as is at present recorded shows that conditions of trace element imbalance, mainly cases of deficiency of one or more elements, are widespread throughout all the continents. In fact it is becoming more and more evident that trace element deficiencies now play a major role in limiting growth and yields in many important agricultural regions.

Thus, mainly due to the work of Dr. Schütte and others, we know now that various trace element deficiencies are of general occurrence throughout the whole of Africa south of the Sahara. However, due to the paucity of research institutes in this area, it is probably true to say that no detailed local knowledge of the distribution of these deficiencies is, as yet, available for any region other than the Western Cape.

That such local knowledge is of the greatest practical importance to farmers and growers is unequivocally demonstrated by the present extremely flourishing condition of the Western Cape fruit and wine industries. Here many of the finest orchards and vineyards are situated on land deficient in manganese, zinc or copper, or, in the worst cases, deficient in all three elements. However, since these nutrient imbalances are now thoroughly understood, they are easily remedied by the inclusion of regular applications of the deficient elements during the course of the ordinary annual spray programmes.

Many other cases of serious nutrient imbalances in respect of agricultural crops, livestock and humans, together with the various methods employed for their diagnosis and treatment, are reported by the author from all the five continents. His account of this important subject is written in an easily readable manner with as few technicalities as possible, so that the book should prove of the greatest interest to anyone even remotely interested in any respect of nutrition, whether he be doctor, veterinarian, biologist, farmer or only a consumer of foodstuffs.

For the specialist much valuable and hitherto unavailable information is given in the many tables and diagrams. There is also an excellent bibliography which is especially valuable to the English speaking worker, since it includes numerous references to many, often little known, foreign language publications.

The index is extensive, running to some 14 pages, and greatly adds to the usefulness of the book. The publishers are to be congratulated on the care taken in its compilation, since, only too often, many otherwise valuable publications are rendered practically useless due to inadequate indexing.

As is apparently always the case in a first edition the usual few errors have slipped in. Thus, the two photographs forming Fig. 33 on page 83 have been transposed, whilst, under Reference No. 57, Butler and Jones' classic textbook should, of course, be entitled *Plant Pathology*. These matters will, no doubt, soon be put right in the second edition, which would appear to be almost inevitable in view of the fact that both an American and a German edition are now in active preparation.

The paper and printing are both of a very high standard and the price is reasonable; the book can therefore be strongly recommended without reservation.

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